

REMARKS

In light of the cancellation of Claim 4, the drawing and specification objections, as well as the rejections under 35 U.S.C. § 112, ¶ 1, are deemed moot.

Applicants respectfully traverse the rejection of Claims 16-21 under 35 U.S.C. § 112, ¶ 2. As Claims 13 and 14 are cancelled, the issue is moot with regard thereto. As to Claims 16-21, however, Applicants believe that the claims as originally presented defined the metes and bounds of their invention with reasonable distinctness and particularly to one of ordinary skill in the art. Reconsideration is requested.

Notwithstanding the foregoing, applicants have made non-limiting changes in Claims 16-21 to eliminate any arguable minor informalities. The entire issue should now be moot.

The rejection of Claims 1, 5 and 6 as being anticipated by Frei under 35 U.S.C. § 102(b) is traversed, and reconsideration is requested.

Unlike the present invention which uses a reaction device such as an internal combustion engine which normally generates energy but exploits its explosion energy to function also as a reformer, the Frei overspeeding prevention device does not teach or even suggest that the so-called front stage reaction means constitutes by the evaporator heating surface 6, the steam turbine 24 and the driven electric generator 25, both receives mechanical power from the outside and outputs mechanical power generated by chemical reactors to the outside.

The overlapping cumulative rejections of Claims 1-3 and 5 as being anticipated by Wilson, of Claims 1-5, 7-9 and 11 as being anticipated by JP '880, and of Claims 1-3 and 6 as being anticipated by WO '161 under 35 U.S.C. § 102(b), are traversed, and reconsideration is requested.

The so-called first stage reaction means constituted by the traction motor 13, the generated electricity 15, and the cells 17 in Wilson generates  $H_2$  and  $O_2$ , but does not teach or suggest that the means can extract energy from the generated  $H_2$  and  $O_2$  using the cells 17.

The JP '880 document is directed to improvement of reforming efficiency and discloses generation of the reaction product by taking the mechanical power as input but, like Frei and Wilson, fails to teach generation of mechanical power. Applicants note that paragraph [0043] refers to reforming gas being taken as power. The gas pressure energy leaking during a process of generation of the reaction product taking the mechanical power as input is used for driving other mechanical equipment, such as a gas turbine. This document does not teach use of the engine explosion energy which cannot be used by the conventional reformer of the type shown therein. The reformer 1 shown in Fig. 2 does not both receive mechanical power and general mechanical power.

The WO '161 document, like the above, is limited to the nature of the mechanical power utilization. That is, the hybrid electrical vehicle described as the WO '161 document outputs mechanical power externally to circulate the fuel

to obtain the chemical reaction. It does not exploit the ability of the engine to function as a reformer.

For the foregoing reasons, the overlapping and unnecessarily cumulative rejections of Claim 10 as being unpatentable over the JP '880 document, of Claims 16-18 as being unpatentable over the JP '880 document in view of Kato et al., and of Claims 7-9, 11, 12, 14 and 10-21 as being unpatentable over the WO '161 document in view of Lowther et al., all under 35 U.S.C. § 102(a), are traversed as failing to establish a *prima facie* case of obviousness based on substantial record evidence instead of impermissible hindsight. Reconsideration is also requested on the following additional grounds.

The JP '880 document employs combustion plasma generators to reform reaction control, i.e., compensate for gas activity. This known system does not teach or suggest an energy generating system, as defined in Claim 10, wherein when the reforming mechanism is operated as a reformer, the temperature can be varied due to adiabatic compression by varying the compression ratio. The progress of a reforming reaction depends on the temperature in the vessel. The variation method is the selection of the ratio of the heat absorption and heat generation and the variation of the compression. If a compression ratio varying means were not present, under a low environmental temperature, only heating action can be selected. Because reforming efficiency is higher in heat absorption, applicants recognized the desirability of providing the compression ratio varying

means whereby the present invention controls the temperature in the vessel irrespective of chemical reaction to permit selection of reforming by heat absorption even under low environmental temperature. Inasmuch as the chemical reaction can be selected in the present invention, adverse effect to the environment can desirably be suppressed to a certain extent. Therefore, the compression ratio varying means is quite effective.

One of ordinary skill would thus have not been motivated to modify the system disclosed in the JP '880 document, notwithstanding the unsubstantiated allegation as to this being a common practice.

As Claims 12-15 have been cancelled, the disclosure thereof and the rejection based upon the JP '880 document and Ankersmit et al. are deemed moot although applicants would refer to the above comments regarding the JP '880 document differences.

The JP '707 document utilizes a four cycle engine only as a partial reforming and heat generation device. Water vapor reforming reaction is performed by the shift converter in a later stage. The claimed invention realizes both a partial reforming reaction and a water vapor reforming reaction in a reforming mechanism. Thereby, because the reaction ratio  $\gamma$  in the formula (14) at page 62 of the specification can be varied depending upon the vessel temperature, the optical reaction ratio can be controlled depending upon the

demanded hydrogen amount and demanded temperature. The JP '707 document contains no such teaching.

The Lowther et al. patent discloses the arrangement of a catalyst within the combustion vessel for making the engine reactor effective for taking out both the reaction product and mechanical power from the raw material. In some reactions, it is also possible to output the reaction product from the raw material and the mechanical power. However, this patent does not teach or suggest switching the production of the reaction product from the raw material and mechanical power depending upon the operational environment.

Consequently, even if the teachings of the JP '707 document and Lowther et al. would have been combinable respectively with the JP '880 document system, the WO '161 document vehicle without the exercise of impermissible hindsight, which they could not have been, the resulting hypothetical combinations would not have resulted in the systems of Claims 17-18 or of Claims 7-9, 11, 12, 14 and 19-21.

Accordingly, favorable and early reconsideration on the claims remaining in this application is earnestly solicited.

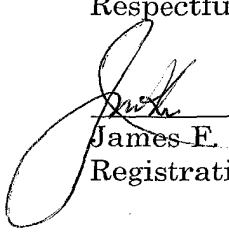
If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

Serial No.: 09/806,530  
Docket No.: 056207.49752US

If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket 056207.49752US).

Respectfully submitted,

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